

ASSIGNMENT 4: DATA VIZ FOR ADVOCACY

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CS-GY 6313 B

1 Interactive Visualization

1.1 Question

How are men's mental states in the US?

The question is a bit general, but I want to communicate to a general audience that is not aware of the high levels of mental health issues that men face in the US.

1.2 Data

1.2.1 Data Source

There are a few data sources to get information from.

The CDC holds lots of information, but particularly I looked into:

1. Behavioral Risk Factor Surveillance System (BRFSS) Survey
2. Household Pulse Survey
3. National Health and Nutrition Examination Survey (NHANES)
4. National Health Interview Survey (NHIS)

However, much to my dismay, lot's of the Data I was looking for was not available. I was able to retrieve information for suicide rates, but the data regarding mental health for men was quite limited or obscure.

I ended up using https://www.cdc.gov/suicide/facts/data.html#cdc_data_surveillance_section_4-suicide-rates for suicide rate information, and <https://www.apa.org/monitor/2015/12/numbers> for general information and stats regarding suicide rates.

1.2.2 Serving Information

For serving information, we use D3's csv function:

```
import * as d3 from "d3";
import { Dataset } from "@types/types";
import theme from "@types/themes";

export async function loadRatesData(): Promise<Dataset[]> {
  const data = await d3.csv("/rates.csv", d3.autoType);
  console.log(data);

  return [
    {
      label: "Total_Population",
      data: data.map((d: any) => ({ x: d["Year"],
        y: d["Total_Population"] })),
      color: "#d4c2d4",
    },
    {
      label: "Male",
      data: data.map((d: any) => ({ x: d["Year"], y: d["Male"] })),
    }
  ]
}
```

```

        color: "#cbd4c2",
      },
      {
        label: "Female",
        data: data.map((d: any) => ({ x: d["Year"], y: d["Female"] })),
        color: "#c2c2d4",
      },
    ],
  ];
}

```

and pass the data to the chart component through a wrapper.

1.3 Visualization

1.3.1 Frontend Setup

The frontend is a simple NextJS application that uses the D3 library to create the chart, and react hooks to update and keep track of state.

My main secondary goal for this visualization was to make the design look sleek and simple.

As opposed to my previous visualization, I wanted to make a website that was more visually appealing and easier to understand, as well as having goodies like smooth transitions and a responsive design.

For smooth transitions I used the Lenis library, which allowed for smooth scrolling. This greatly improved the feel of the website, and allowed me to dynamically render the chart when the user scrolls to the chart section.

```

const [isVisible, setIsVisible] = useState(false);
const ref = useRef<HTMLDivElement>(null);

// Lenis hook to listen for scroll events
useLenis(() => {
  if (ref.current && !isVisible) {
    const { top, bottom } = ref.current.getBoundingClientRect();
    const windowHeight = window.innerHeight;

    if (top + 300 < windowHeight && bottom > 0) {
      setIsVisible(true);
    }
  }
});

```

To further my secondary goal, i carefully created a color scheme that was easy on the eyes, sleek, and modern. Also, I utilized DaisyUI to create components with a modern look and the color scheme described above:

```

daisyui: {
  themes: [
    {
      mytheme: {
        primary: "#50514F",
        secondary: "#CBD4C2",
        accent: "#CF8E80",
        neutral: "#540D6E",
        "base-100": "#FFFCFF", // Background
        info: "#CBD4C2",
        success: "#CF8E80",
        warning: "#FFFCFF",
      },
    },
  ],
}

```

```

    error: "#540D6E",
  },
},
],
}

```

1.3.2 Additional Components

The main page has a Hero component, a CTA, and data callouts.

The Hero displays the main question.

The CTA displays a button that takes the user to <https://www.mensmindsmatter.org/> to learn more about the topic and how to get involved with donating.

The final components are the data callouts, which display some key insights about men's health. I wish this could have been charts instead, but finding specific information about mental health was a bit difficult. Nevertheless, these prove helpful to the user to get informed on the topic.

1.3.3 Visualization Logic

I revisited D3 to create a custom chart, building upon my previous experience with the library.

Working directly with D3 again proved to be more challenging but also rewarding, as it deepened my understanding of chart components and their implementation.

I gained a more explicit appreciation for the building blocks of a chart:

- Margins: Carefully planned margins to ensure sufficient space for elements like axes, labels, and legends.
- Scales: Mapped dynamically to the data, ensuring that the chart is responsive to changes in data.
- Line: This time, I used 3 lines to represent the data, each with a different color.
- Tooltip: On hover, the user can see the exact data point they are looking at.
- Circles: Since we were using 3 lines and transitions, the circles also follow the lines created.
- Dynamics: I progressively drew the lines, and added a transition to make the chart more visually appealing. I also believe that this draws attention to the chart, as the user is more likely to notice the chart if it is moving. Plus it highlights how rates increase over time.
- Axes: Created axes and basic labels for intuitive and fast understanding by the user.

1.4 Improvements

1.4.1 More Charts

I would have liked to have more charts, but I was unable to acquire relevant data.

In the future, I would like to have a chart that shows the rates of mental health issues posed by men. This would be a more direct visualization of the trends, and how it's becoming a bigger and bigger issue.

1.5 Conclusion: Do we answer the question?

I believe for both:

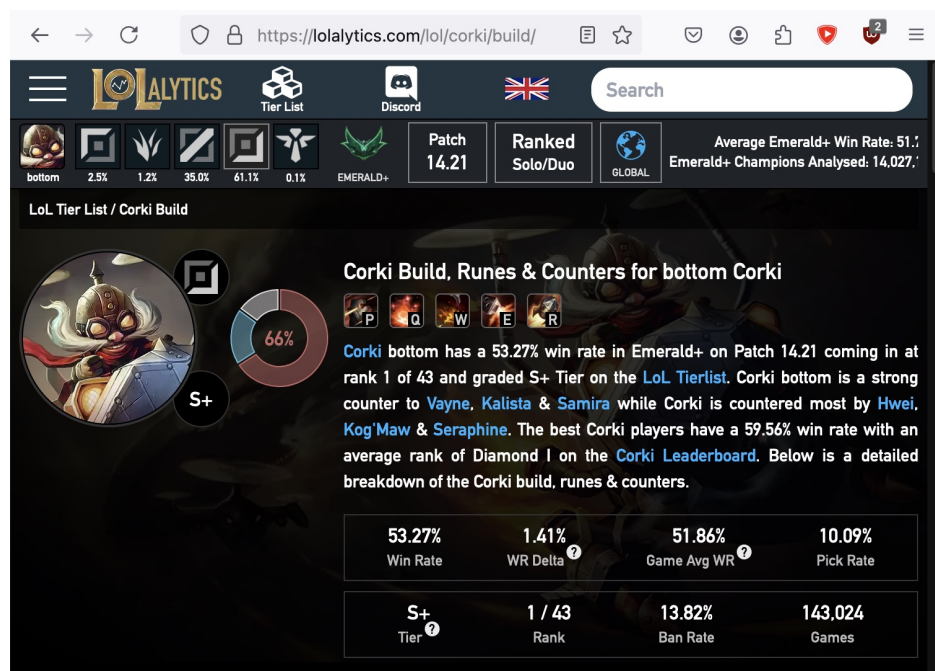


Figure 1: Corki's champion page.